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16 September 1960

In Reply Refer To:

SDN 0-35774/22- 2

ATTN:

SUBJECT: Contract No. RD-103, Proposal for Amendment to Task Order No. 21

Pursuant to discussions between the Government's technical representatives and those of the [redacted], the Contractor is pleased to submit a firm cost plus fixed fee proposal covering an engineering evaluation of AS-6 antennas. This proposal consists of the following:

- Exhibit "A" - Statement of Work
- Exhibit "B" - Technical Discussion
- Exhibit "C" - Estimated Cost Summary
- Exhibit "D" - Delivery Schedule

The prices quoted herein, which are f.o.b. [redacted] exclusive of royalty payments, federal, state or local excise, sales and use taxes, may be considered firm for a period of thirty (30) days from the date of this letter.

It is anticipated that any contract awarded as the result of this proposal will be set forth as a supplement to Task Order No. 21 and that the terms and conditions of Contract No. RD-103 shall apply.

In the performance of this contemplated procurement, the Contractor anticipates travel and overtime premium to the extent set forth in Exhibit "C". It is therefore requested that any contract awarded for this program specifically authorize travel and overtime premium "Subject to audit review by the Contracting Officer".

"This document contains information affecting the National Defense of the United States within the meaning of the Espionage Act, Title 18, U. S. C., Sections 770 and 771. Its transmission or communication of which in any manner to an unauthorized person is prohibited by law."

DOC	5	REV DATE	18 MAR 1980	BY	064540
ORIG COMP	056	OPI	56	TYPE	01
ORIG CLASS	S	PAGES	7	REV CLASS	C
JUST	22	NEXT REV	2010	AUTHI	HR 36-2

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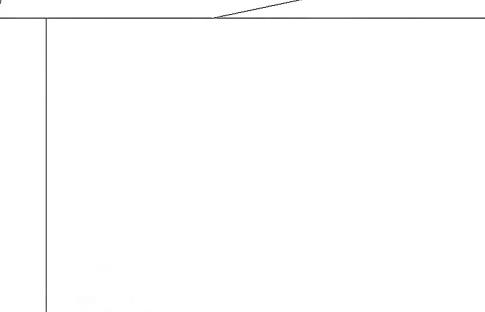
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**SUBJECT:** Contract No. RD-103, Proposal for  
Amendment to Task Order No. 21. Page 2 of 2.

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Requests for additional information regarding this proposal may

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Enclosures (4)  
Exhibits "A", "B", "C" and "D"

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~~EXHIBIT "A"~~

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STATEMENT OF WORK

- Item I - Conduct an engineering evaluation of AS-6 antennas.
- Item 2 - Monthly reports on Item I.
- Item 3 - Final report on Item I.

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~~EXHIBIT "B"~~

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TECHNICAL DISCUSSION

## AS-6 FIELD UNIT ANTENNA

1.0 Introduction

A review of the tests of the AS-6 Field Unit and the comments of the users in the field reveals the security requirement of reduced antenna height. The objective of this proposed program is to reduce the height of the antenna to approximately one half its present height and yet not appreciably reduce the efficiency.

The original antenna is shown in Figure 1A. It can be seen that the vertical whip is 15 feet high. There are four equally spaced radials lying on the ground which act as the ground plane or counter-poise for the vertical antenna. Each radial is twenty feet long. The units which make up the system and the interconnecting cabling are also important parts of the ground plane.

2.0 The Proposed Antenna

The proposed antenna, as shown in Figure 1B, consists of a seven and one half foot vertical element and four active guywires approaching the earth at a nominal 45 degrees. At a point on the guywires, seven and one half feet from the tip of the vertical portion, an insulator is inserted to terminate the active portion of the antenna. Four 20 foot ground radials will be used as they were before. It should be pointed out that these dimensions are starting points and might have to be changed because an undesirable impedance or Q occurs at one of the operating frequencies. The length of the original antenna was adjusted to get the half wave point just above the highest operating frequency. The dimensions of the new antenna will be chosen to put the half wave point either above or between the present transmit and receive frequencies.

One of the big electrical changes of the new antenna is the increase of the capacity to ground. This increase in capacity will reduce the total length of radiator necessary to tune the antenna to a specific frequency. In addition, it is expected that the antenna Q will be reduced resulting in a more efficient match between the tube and the antenna. This increased capacity will also have a disadvantage in that it will make the antenna more susceptible to changes in environment. Reduced antenna Q means increase in antenna bandwidth, a factor which might appear attractive to the R8-24 program.

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~~EXHIBIT "B"~~

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3.0 Program Description

The proposed program is divided into three parts where the first part is a period of local measurement and dimension adjustment. This will provide for impedance measurement of the proposed antenna and the correction of the active guywire length to make the over-all system resonant to the desired frequency.

The second phase of the program will be a period of long distance testing over the maximum range expected from the AS-6 system. The objective of this phase is to determine the effectiveness of the new antenna or antennas and compare them with the present antenna. This test, conducted by [redacted] personnel, will involve transmitting from the contractor's location using the various experimental antennas and receiving at a government supplied site augmented by [redacted] supplied special test equipment.

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The third and final phase of the program involves a final report on the program. Included will be curves of impedance and Q of the final antenna, and the results of the long distance comparison tests. Progress on the program will be reported in the normal monthly RD-103 reports.

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~~EXHIBIT "D"~~

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DELIVERY SCHEDULE

- |        |   |  |
|--------|---|--|
| Item 1 | - | To be completed four (4) months after receipt of contractual coverage. |
| Item 2 | - | Fifteen (15) days following end of reporting period.                   |
| Item 3 | - | One (1) month following completion of Item 1.                          |

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